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Filling Environmental Data Gaps for SDG 11: A Survey of Japanese and Philippines Cities with Recommendations

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ABSTRACT

Cities will play a pivotal role in determining whether the Sustainable Development Goals (SDGs) realize their transformational potential. A lack of data from cities may nonetheless weaken the policies and monitoring systems needed to realize that promise. This article examines whether "environmental" data exists for SDG 11 in 18 cities in Japan and 10 cities in the Philippines and proposes empirically-grounded recommendations to help close data gaps. It finds a lack of good environmental data for SDG 11 in Japan and the Philippines; it also finds that the data gaps are more pronounced in the Philippines than Japan. In the Philippines, the most significant challenges involve air quality, public transport, and green space data as well as systematizing and standardizing the collection of time-series data. To help close identified gaps, the article recommends working with existing platforms to enhance intercity learning and strengthening support from national statistical agencies for standardized reporting of key data over multiple years. In Japan, the greatest challenges involve collecting data in smaller cities, especially for air pollution and adequate housing indicators. Our findings suggest Japan's national statistical agencies should offer targeted support from the national statistical agencies for smaller cities and estimating figures from existing statistics for air quality and housing data. While these findings come from a review of Japanese and Philippines cities, they may also apply to other cities in the developed and developing countries. All cities may want to prioritize context-appropriate proxies rather than expending scarce resources on data with limited relevance.

Keywords SDG 11, cities, data gaps, environmental data

1. INTRODUCTION

With more than half the world's population, cities will play a pivotal role in determining whether the Sustainable Development Goals (SDGs) realize their transformational potential. The agreement over a separate SDG on cities (SDG 11) and the New Urban Agenda (Habitat III) demonstrate the international development community's recognition of this potential (adelphi and Urban Catalyst 2015). However, a lack of subnational data may make it challenging for cities to formulate the policies and build the monitoring systems needed to deliver on this potential (Munier 2005). This is particularly the case for environmental data. The main purpose of this issue brief is to draw upon a sample of 28 cities—18 from Japan and 10 from the Philippines—to

provide development specialists, policymakers and researchers with insights into the availability of environmental data for SDG 11. The issue brief also proposes several more general recommendations that could help governments outside Japan and the Philippines acquire the environmental data they need to make cities more sustainable.

The issue brief finds that, similar to other studies on subnational SDG data, the surveyed cities lack several types of environmental data needed for SDG 11. In the Philippines, the most significant challenges involve air quality and green space data as well as systematizing and standardizing the collection of time-series data. In Japan, the greatest challenges involve collecting data in smaller cities, especially for air pollution and adequate housing indicators. To help close identified data gaps in the Philippines, the paper recommends working with existing platforms (League of Cities of the Philippines) to enhance intercity learning and strengthening support from national statistical agencies for standardized reporting over multiple years. In Japan, targeted support from the national statistical agencies for smaller cities and estimating figures from existing statistics for air quality and housing data holds promise to improve the quantity and quality of figures. More generally the brief suggests that cities may want to prioritize context-appropriate proxies rather than expending scarce resources on data with limited local relevance. Greater engagement with civil society organizations, businesses and other stakeholders as part of the SDG localizing process can help determine which kinds of data are indeed locally relevant.

For urban specialists and policymakers alike, the agreement on SDG 11 marked an important milestone in multi-decade drive to make cities sustainable. Dating back to the first United Nations Conference on the Human Environment (UNCHE) in 1992 (the Rio Summit), there was a consensus that cities needed to contribute to a more sustainable future. This shared vision was later reflected in the more than 6000 Local Agenda 21 initiatives that demonstrated the willingness of subnational governments (and other local actors) to advance more sustainable policies and practices.1 But even with a groundswell of support for Local Agenda 21, ample scope existed for spreading sustainable urban development.

To a significant extent, SDG 11 emerged from a growing awareness of the scope for deeper and wider change—and the possibility that such a goal could help bring about such meaningful change. More concretely, during the negotiations over the SDGs an expanding coalition of stakeholders worked skillfully to ensure that cities would have their own SDG. This effort not only testified to the power of a dedicated group of advocates and influencers to achieve their desired ends; it implied that cities could benchmark their performance against a more holistic set of development indicators, including oft-neglected environmental indicators featured in this issue brief. It further meant that city governments would have a clearly identifiable role in implementing the 2030 Development Agenda. To quote one review, "SDG 11 could become the lynchpin of [a] localizing process

[1] The motivation and modalities for implementing Local Agenda 21 are spelled out in Chapter 28 of Agenda 21. Chapter 28 is three pages long and focuses chiefly on the consultative processes that cities and partners should undertake to select actions needed to implement Agenda 21. There are no specific targets or standardized indicators that can guide the implementation of Agenda 21.

[for the SDGs](Birch et al. 2015)."

Whether SDG 11 does become a "lynchpin" may rest on several pragmatic considerations. The most essential is arguably data. When it comes to city level data, recent studies have been rather pessimistic about future prospects. Some of this doubt relates to the path-breaking nature of SDG 11: it will not be easy to introduce a more varied, expansive set of targets into contexts that have measured performance on narrower sets of socioeconomic indicators. Arguably the first step in broadening that list of indicators will involve the capacities to gather, compile, and effectively use data at the city level.

In terms of subnational data, one of the more revealing studies on data for SDG 11 looked at how data measured up against ten desirable principles across five mid-sized cities in five different regions (Bangalore (Bengaluru), India; Cape Town, South Africa; Gothenburg, Sweden; Greater Manchester, United Kingdom; and Kisumu, Kenya). The study found that, despite considerable variations across the cities, sizable constraints on, inter alia, data quality, compliance with methodological standards, non-availability of disaggregated data, and a lack of regular reporting could undermine SDG 11. The study also raised concerns about the value added of easy-to-assess "tick box"2 indicators appeared across the five cases (Simon et al. 2015). Other studies have rightfully worried about both these data gaps and underlined the importance of the localizing process needed to ensure globally set indicators align well with subnational priorities (Klopp and Petretta 2017).

To be sure, some of these concerns will be addressed in the learning process that many state and non-state actors experience as they integrate the SDGs into their own relevant contexts (Reed, Fraser, and Dougill 2006; Regional Global Taskforce of Local and Governments 2016). However, these early reviews raise several questions. These questions begin with whether data gaps exist across a larger number of cities than studied previously, especially environmental data that would be critical to moving toward a more holistic set of urban indicators. They also include whether the data gaps are more pronounced in developing than developed countries. Finally, they point to what kind of empirically-grounded recommendations can help close environmental data gaps in developed and developing countries. The remainder of the paper aims to address these issues by looking at environmental data for six indicators on a sample of 18 cities in Japan and 10 cities in the Philippines.

2. METHOD

A few considerations merit underlining before turning to the issues that closed the last section. One is that in some cases the six "environmental"[3] indicators chosen (see Table 1 with a listing of the chosen environmental indicators in boldface italics) are indirectly related to the environment. For instance, "the proportion of urban population living in slums, informal settlements or inadequate housing" will typically

[2] The term "tick box" refers to simply putting a check in box next to determine whether a specified activity is carried out. Ticking the box says very little about how well that activity is performed and with what kinds of results. As such, it may be possible to achieve a target with limited effort.
[3] It is important to note that other goals besides SDG 11 also have indicators that are related to environmental issues in cities.

impact the environment but may have stronger connections to the social dimensions of sustainable development. Another consideration is that environmental data for the SDGs tends to be more limited than data for other dimensions of sustainable development. Therefore there may be fewer gaps for socioeconomic than environmental indicators, and the environmental data may be not be fully representative of SDG 11 as a whole (Zusman, Olsen, and Yoshida 2016). A related point involves the use of proxy data. In collecting data, it was frequently difficult to find perfect matches for the internationally defined indicator and thus there was a search for replacements of varying degrees of relevance. These varying degrees of relevance are distinguished on Tables 2 as being either "relevant" or "weak" proxies. Also similarly, in many instances there was a limit of multi-year or time-series data that would be important for examining trends and tracking progresses. Where multi-year data is present is indicated with the superscript "my" (see Table 2). Finally, while it might have been possible to use available data to calculate some of the indicators; this possibility could have been explored in more depth, and is discussed in the paper's conclusion.

Bearing these caveats in mind, IGES worked with the National Institute for Environmental Studies (NIES), Japan, and the *International Council for Local Environmental Initiatives (ICLEI)* Southeast Asia Secretariat, the Philippines to examine the data availability in 18 Japanese and10 Philippines cities for the indicators and targets in Table 1. Japan and Philippines were chosen from a desire to look at a developed and developing country in Asia.

Table 1: Indicators and Targets for SDG 11

Indicators
11.1.1 Proportion of urban population living in slums, informal settlements or inadequate housing
11.2.1 Proportion of population that has convenient access to public transport, by sex, age and persons with disabilities
11.3.2 Proportion of cities with a direct participation structure of civil society in urban planning and management that operate regularly and democratically
11.6.1 Proportion of urban solid waste regularly collected and with adequate final discharge out of total urban solid waste generated, by cities
11.6.2 Annual mean levels of fine particulate matter (e.g. PM2.5 and PM10) in cities (population weighted)
11.7.1 Average share of the built-up area of cities that is open space for public use for all, by sex, age and persons with disabilities

In Japan, the data gathering initially focused on 10 large geographically diverse cities. A random set of eight additional medium and small-sized cities was then also included to ensure that not only major cities were represented in the sample (see Figure 1 for a map of the cities). Data was collected solely from Japan's national government websites; the authors acknowledge that fieldwork may have uncovered other sources of data. The authors further recognize that, while additional variables beyond size could have factored into the selection of the city (i.e. level of economic development, geography, demography), the results of the data analysis suggest that these additional factors may have not significantly altered the results.

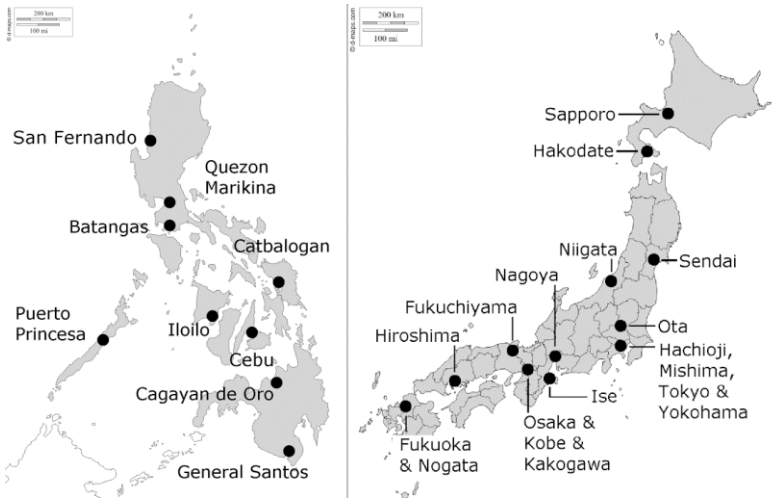

Figure 1: Selected Cities in the Philippines and Japan

In the Philippines, the limits on publicly available data required that the authors visited the 10 targeted cities to collect figures and planning documents (see Figure 1 for a map of the cities). Also for the Philippines, though attempts were made to select a geographically and demographically diverse sample of cities, connections to local government unit (LGU) officials ultimately influenced the selection. It is likely that, on average, more data gaps existed in cities not visited for this study because those cities would tend to be less well connected to international networks and less likely to have better data. This is nevertheless only a well-reasoned inference; limited resources made it impossible to verify if this was indeed the case.

3. RESULTS

The results of this exercise can be divided into comments on specific indicators as well as more general assessments:

For indicator 11.1.1, "populations living in slums, informal settlements or inadequate housing," relevant proxy data were available for multiple years in only the large cities in Japan. Meanwhile, all of the sampled cities in the Philippines had either relevant data or relevant proxies, but only one city had such data for multiple years. The relatively higher coverage of this data in the Philippines might reflect the fact that the Millennium Development Goals (MDGs) also included a similar target on populations living in slums, while Japan generally has fewer issues with adequate housing and did not track comparable data during the MDG process as it is a developed country.

For "access to public transport" (11.2.1), there was more relevant data in Japan than the Philippines. For Japan, all of the sampled cities had at least one data point for relevant proxies and multi-year data for weaker proxies. The relatively complete coverage of data for public transport access in Japan may reflect the fact that the country's transport system is well developed and formally organized. For the Philippines, the types of data was much more varied across cities; 30% of the sample had relevant proxies and the remainder had weaker proxies. The greater cross-city variation in the Philippines might reflect the challenges inherent in collecting good transport data in a rapidly motorising country; these challenges are likely compounded by the informal nature of the transport system (with multiple paratransit operators).

For indicator 11.3.2 on "participation in urban planning," Japan and the Philippines exhibited similar patterns. There was civil society participation in urban planning and management from planning documents for all but two of the Japanese cities over multiple years and all of the Philippines cities for one year. This engagement could not only potentially make cities more people- and environmentally-friendly, but also suggests there may be additional capacities outside of the government to gather data. It merits highlighting, however, that it is virtually impossible to determine the length, depth and results of stakeholder engagement from this indicator. This issue too will be discussed in greater detail in the conclusion.

For indicator 11.6.1 on "waste management," the picture varied across the two countries. In Japan, time-series data was available through 2012 for urban solid waste management. This finding is arguably related to having well-designed data management systems consistent with a longstanding commitment to waste management in Japan. For the comparable indicators in the Philippines, 70% of the cities had some relevant data or proxies for a single year, though the reporting standards for the data varies considerably and appears more ad hoc and project driven. Growing concerns over adequate waste management suggest that more systematic time-series data might be a need area moving forward in the Philippines.

For indicator 11.6.2 on "air quality," there were also differences across Japan and the Philippines. Single year data on fine particular matter (PM2.5) was found in 10 large Japanese cities; one of the smaller cities in Japan had relevant proxy data. In the Philippines, 30 per cent of cities had single-year data or relevant proxies and the remaining cities had much weaker proxies. The surprisingly lower level in Japanese cities with PM data may reflect the fact that Japan ranks 95th globally among 180 countries and 22nd among 35 organisation for economic cooperation and development (OECD) countries when it comes to exposure to fine particulates. (EPI, Yale University, 2016).

For 11.7.2 public and universally accessible green space, the picture suggests that Japanese cities were well equipped with figures for public parks as opposed to green spaces more generally. Consistent with other data categories, more varied types of proxy data was found for this indicator in the Philippines: five cities had relevant proxies and five cities had weaker proxies for a single year.

Returning to the questions that concluded the previous section, the overall assessment is that there is lack of good environmental data for both Japan and the Philippines (see Table 2 and Figures 1 and 2). The quality and quantity of data appears to be greater in Japan than the Philippines. This is somewhat evident in the amount of relevant data or proxies but clearest in the lack of multi-year data in the Philippines cities. In only three cases, was multi-year data available for the Philippines, whereas nearly all of the gathered data in Japan was reported on a yearly basis. This likely suggests that data reporting protocols are more standardized in Japan

Table 2. Assessment of Selected SDG 11 Indicators

	Japan	**Philippines**
11.1.1 Population living in slums	Relevant multi-year proxies available in 10 large cities	All cities have relevant data or proxies but only one for multiple years
11.2.1 Access to public transport	All cities have at least one year of relevant data and multi-year relevant proxies	30% of the cities have relevant proxies and the remainder have weaker proxies; none of the data is multi-year data
11.3.2 Civil society	Available in 100% of planning documents—though quality of	Available in 100% of planning documents—though quality of engagement

	Japan	**Philippines**
participation in urban planning	engagement is unclear	is unclear
11.6.1 Waste management	Available in all cities (through 2012)	70% of the cities had some relevant data or proxies for a single year.
11.6.2 Air pollution	Single year data on fine particular matter (PM2.5) was found in the 10 large Japanese cities; one of the smaller cities having relevant proxy data.	30 percent of cities had single year data or relevant proxies and the remaining cities had much weaker proxies.
11.7.1 Open space	100 percent of the cities had data on public parks but not public space or access	50 percent of the cities had relevant proxies and 50 percent had much weaker proxies

Good / Fair / Limited		Marikina	Quezon City	Cagayan de Oro	Batangas	Puerto Princesa	Iloilo	Cebu	S.Fernando La Union	GenSan	Catbalogan
Proportion of urban population living in slums, informal settlements or inadequate housing	Relevant Data	X			X	X^{my}	X	X	X	X	
	Relevant Proxies	X	X	X	X	X	X	X	X	X	X
	Weak Proxies										
Proportion of population that has convenient access to public transport, by sex, age and persons with disabilities	Relevant Data										
	Relevant Proxies			X					X	X	
	Weak Proxies	X	X		X	X	X	X			X
Proportion of cities with a direct participation structure of civil society in urban planning and management that operate regularly and democratically	Relevant Data	X	X	X	X	X	X	X	X	X	X
	Relevant Proxies										
	Weak Proxies										
Proportion of urban solid waste regularly collected and with adequate final discharge out of total urban solid waste generated, by cities	Relevant Data	X		X	X	X		X	X	X	
	Relevant Proxies	X		X	X	X		X	X	X	
	Weak Proxies										
Annual mean levels of fine particulate matter (e.g. PM2.5 and PM10) in cities (population weighted)	Relevant Data			X^{my}	X	*			*		
	Relevant Proxies		X		X						
	Weak Proxies	X					X	X		X	
Average share of the built-up area of cities that is open space for public use for all, by sex, age and persons with disabilities	Relevant Data										
	Relevant Proxies	X	X				X	X		X	
	Weak Proxies			X	X	X			X		

The figure is color coded to provide an overall evaluation of the coverage of data for each of the indicators. The coverage is considered good for one indicator and fair for another two. Three of indicators have more limited coverage. The superscript “my” refers to multiple years.

Good Fair Limited			Sapporo	Sendai	Tokyo23	Yokohama	Niigata	Nagoya	Osaka	Kobe	Hiroshima	Fukuoka	Hachioji	Hakodate	Oota	Kakogawa	Ise	Fukuchiyama	Mishima	Noogata
Proportion of urban population living in slums, informal settlements or inadequate housing by sex, age and persons with disabilities	Relevant Data		X^{my}	X^{my}	X^{my}	X^{my}	X^{my}	X^{my}	X^{my}	X^{my}	X^{my}	X^{my}								
	Relevant Proxies		X^{my}	X^{my}	X^{my}	X^{my}	X^{my}	X^{my}	X^{my}	X^{my}	X^{my}	X^{my}								
	Weak Proxies																			
Proportion of population that has convenient and safe access to public transport	Relevant Data																			
	Relevant Proxies		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
	Weak Proxies		X^{my}	X^{my}	X^{my}	X^{my}	X^{my}	X^{my}	X^{my}	X^{my}	X^{my}	X^{my}	X^{my}	X^{my}	X^{my}	X^{my}	X^{my}	X^{my}	X^{my}	X^{my}
Structured urban planning with civil society participation	Relevant Data		X^{my}	X^{my}	X^{my}	X^{my}	X^{my}	X^{my}	X^{my}	X^{my}	X^{my}	X^{my}	X^{my}	X^{my}	X^{my}	X^{my}		X^{my}	X^{my}	
	Relevant Proxies		X	X	X	X	X	X		X	X	X								
	Weak Proxies		X		X	X	X	X	X	X	X	X								
Proportion of urban solid waste regularly collected and with adequate final discharge out of total urban solid waste generated, by cities	Relevant Data		X^{my}	X^{my}	X^{my}	X^{my}	X^{my}	X^{my}	X^{my}	X^{my}	X^{my}	X^{my}	X^{my}	X^{my}	X^{my}	X^{my}	X^{my}	X^{my}	X^{my}	X^{my}
	Relevant Proxies																			
	Weak Proxies																			
Annual mean levels of fine particulate matter (e.g. PM2.5 and PM10) in cities, and city planning that designates this	Relevant Data		X	X	X	X	X	X	X	X	X	X								
	Relevant Proxies				X				X								X			
	Weak Proxies																			
Average share of the built-up area of cities that is open space for public use for all, by sex, age and persons with disabilities	Relevant Data																			
	Relevant Proxies																			
	Weak Proxies		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X

Figure 3: Summary Assessment of 18 Cities in Japan

The figure is color coded to provide an overall evaluation of the coverage of data for each of the indicators. The coverage is considered good for two indicators as well as one additional indicator for large cities. Two indicators have fair coverage, while two others have limited coverage for smaller cities. The superscript “my” refers to multiple years.

4. DISCUSSION

This data availability assessment leads to another key question: what recommendations can help address potentially important data gaps? In the Philippines, there appears to be significant scope for working across cities to understand how environmental data is collected and analysed. The fact that cities such as Puerto Princesa perform better across several indicators underlines that some cities tend to do better at gathering multiple kinds of data and thus could share techniques with other cities. Taking advantage of existing platform (League of Cities of the Philippines) with support from the national government and/or city networks may facilitate exchanges of this kind of knowledge. A related suggestion involves working more closely with civil society groups to compile relevant data. This may be feasible given the apparent engagement of civil society in some stages of urban planning in all of the surveyed Philippines cities. A possible example of working with civil society would be to support CSO's involvement in measuring air pollution at the community levels; breakthroughs in monitoring technology now make it possible to get rough indications of air quality with lower cost, user-friendly equipment.

For the case of Japan, working with smaller cities with arguably more limited capacities on air quality and housing data might be a useful way forward.[4] Civil society organizations may also help to determine relevant proxies—for instance, whether the percentage of the population living in substandard conditions is a good substitute for the number of people living in slums. Similarly, it may be possible to use existing data that is substantively related to the target but different than the SDG indicators. To illustrate, for the indicator on housing, there is already existing data on waste management that might help determine whether there is housing with adequate sanitation (another case involves the town of Shimokawa). Another suggestion involves using existing data to calculate needed estimates for other data. For example, in cities lacking air quality monitoring data the amount of air pollution can be estimated from the consumption of energy in different sectors. These types of calculations could be supported by national statistical bureaus given that much of the data in Japan appears to comply with national reporting standards.

Box 1: Selecting SDG Indicators in Shimokawa, Japan

As highlighted elsewhere in this brief, many local governments have struggled to identify data consistent with the globally recommended sustainable development goal (SDGs) indicators. There may even be challenges identifying local indicators that are consistent with national level indicators. As a result, some local governments have begun to develop their own indicators. In

[4] In contrast to the Japanese case, centrally aggregated data on subnational issues was scarce in the Philippines; it was therefore not possible to establish proxy indicators that could be applied across all cities.

doing so, they have often aimed to locate data that could be compared easily with similarly sized locales and derived from regularly updated statistics. In 2017, the town of Shimokawa held discussions to incorporate the SDGs concept into its new town masterplan—a document that is scheduled for completion in 2018 and intended to guide sectoral plans/programmes from 2019-2027. The town also included a set of indicators to assess the progress of activities under the masterplan. The indicators were chosen in collaboration with town residents and researchers from the Institute for Global Environmental Strategies (IGES).

In determining which indicators were appropriate for Shimokawa, the town made two important decisions. The first involved using indicators based on data from a voluntary survey that Shimokawa conducted at its own initiative to elicit citizen views on their level of satisfaction, living situation and town policies. The second notable decision was to concentrate on data that could be collected through existing reporting processes without imposing additional work on the local government. For this second case, Shimokawa is planning to use revenue data from local inhabitant taxes to understand issues such as poverty and inequality. This will help the town formulate policies and actions that can help its citizens. For example, households run by single mothers might have limited incomes and be particularly vulnerable to sudden changes in the economy or natural disasters. Combining revenue data with other socioeconomic and environmental indicators could help the town limit vulnerabilities for these at-risk segments of the population. The indicator system could also help Shimokawa understand how it is doing relative to other towns while making existing data even more useful. The results of these efforts will further help the city become more sustainable.

A final suggestion to improve the institutional capacity of the statistical offices, is to secure greater effort to devolve financial and human resources with local governments; training programs for data gathering and analysis in local universities (perhaps supported with national level grants); and possibly adding-on questions to regular surveys such as the popular census.

5. CONCLUSION

The SDG holds promise to translate aspirational targets into equally impressive actions. However, if they are going to make the connection between aspiration and action in cities, better subnational environmental data will be essential. This paper highlights that in Japan and the Philippines cities, the baseline for environmental indicators has several gaps. Not surprisingly, these gaps appear greater in the Philippines than Japan. The paper nonetheless suggests that these gaps need not be permanent. In the Philippines, there may be opportunities for learning across cities and support from

the national government to collect local relevant indicators. The latter possibility may be particularly useful for air quality, public transport, and green space data as well as time series data. In Japan, capacity building programs for smaller cities and calculating data from existing statistics presents a reasonable way forward.

These recommendations lead to an additional question concerning incentives to collect data. Some local (and national) leaders might oppose gathering quality data as they could become accountable for delivering on more expansive development agenda (Newman and Jennings 2008). International organizations would seemingly have an interest and possible resources to address these concerns. For example, international organizations can reward local leaderships for advances in localizing the SDGs; moreover, part of that reward program could focus on not simply gathering but using the data toward productive ends. Another incentive is performing well on the SDGs may also draw new business opportunities and investment to the city in question. This will, of course, require raising the profile of high-performing cities. Elevating high-performing cities can be achieved with the support of the national government, but greater attention may come from rewards offered by global and regional networks.

An additional concern regards the countries selected for this research. While Japan and the Philippines are indeed different, neither is considered a least developing country (LDCs). LDCs may face additional constraints on capacities as well as different data needs. This could lead to a focus on very different set of proxy indicators for LDCs. It would be useful to conduct similar studies for LDCs and then make recommendations based on that follow-up research.

A final issue emerging from this paper involves how generalizable are the findings from this study to other cities. To some extent, the challenges encountered here are specific to the countries in question. However, the analysis does suggest other areas countries may want to examine closely as they bring the SDGs down to the subnational level. These include the strengthening capacities to gather relevant data in smaller cities and standardizing data collection and reporting over multiple years at the national level. Last but not least, a greater emphasis on not only the presence but the quality of multi-stakeholder engagement appears likely to help cities identify locally-relevant indicators and how they can be used to drive transformational change that is also context-appropriate. This may suggest a need for careful thinking on more systematically assessing not merely the presence but the quality of stakeholder engagement in cities.

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